

LXII.—On von Heuglin's, Rüppell's, and Sundevall's Types of African Rhinolophi. By KNUD ANDERSEN.

OWING to the most obliging kindness of Professor Dr. Kurt Lampert, Royal Natural History Cabinet, Stuttgart, Dr. Fritz Roemer, Museum Senckenberg, Frankfurt-a.-M., and Professor Dr. Ejnar Lönnberg, Riksmuseum, Stockholm, I have had the opportunity of examining the types of von Heuglin's *Rhinolophus macrocephalus*, *acrotis*, and *minimus*, of Rüppell's *Rh. fumigatus*, and of Sundevall's *Rh. awritus*. In returning my sincere thanks to the above-named Directors and Keepers of Continental Museums I, in the following, give a summary of the results at which I have arrived.

Rhinolophus fumigatus, *macrocephalus*, and *Antinorii*.

Rh. fumigatus *.—There are two cotypes (mounted specimens, adult individuals) preserved in the Frankfurt Museum, labelled "Schoa in Abyssinien; Geschenk von Dr. Rüppell, 1841; No. II. F. 7. a & b." Besides these specimens I have had for examination, through the generosity of Prof. Lönnberg, a beautifully mounted topotype from the collection of the Stockholm Museum †. Peters ‡, who examined one of the cotypes (no doubt that specimen which still, on the back of the wooden block, bears the words "29 Decbr. 1865, Berlin," written in pencil), found it exactly like *Rh. ferrum-equinum* but for two small points of difference: *Rh. fumigatus* was stated to have the posterior connecting-process still shorter and the base of the hairs of the underside dull brown ("dunkelbraun"). Dobson § put the name down as a synonym to *Rh. ferrum-equinum*.

Rh. macrocephalus ||.—Two cotypes (in alcohol) preserved in the Stuttgart Museum, labelled "No. 1059; Abyssinien, v. Heuglin; 1863." Dobson ¶ regarded this bat as "a small form of *Rh. ferrum-equinum* with dark coloured fur."

* Rüppell, "Beschreibung mehrerer neuer Säugethiere, in der zoologischen Sammlung der Senckenbergischen naturforschenden Gesellschaft befindlich," Mus. Senck. iii. (1842) p. 132 (conf. also p. 155).

† This is the specimen referred to by Sundevall as "ab ipso Rüppellio missus" (Kgl. Sv. Vet.-Akad. Handl., new series, vol. ii. pt. 2, no. 10 (1858), p. 13). It is labelled "Mam. Ex. no. 1594."

‡ Peters, MB. Akad. Berlin, 1866, pp. 17-18; conf. also *op. cit.* 1871, p. 311; and C. von der Decken, 'Reisen in Ost-Afrika,' iii. 1 (1869), Taf. ii. fig. 3.

§ Dobson, Cat. Chir. Brit. Mus. (1878) p. 119.

|| Von Heuglin, 'Reise in Nordost-Afrika,' ii. (1877) pp. 22-23.

¶ Dobson, "Report on Accessions to our Knowledge of the Chiroptera during the past two years (1878-80)," Rep. Brit. Assoc. 1880, p. 10.

Results.—*Rh. fumigatus* and *Rh. macrocephalus* are based upon individuals of the same species: the types of both agree exactly with each other to the smallest details; but they are certainly *toto cælo* different from *Rh. ferrum-equinum*. They are the same species as, later on, described by Dobson* under the name *Rh. Antinorii*. From *Rh. ferrum-equinum* they differ principally in the following points:—(1) The horse-shoe is very much broader, covering almost the whole of the muzzle, and differently formed; (2) the sella is much broader, only very slightly (scarcely perceptibly) constricted below the middle, its lateral margins subparallel (in *Rh. ferrum-equinum* the sella is strongly pandurate); (3) the front face and the lateral margins of the sella are densely covered with long straight hairs, one of the most striking peculiarities of "*Rh. Antinorii*" and its nearest allies, the large *Rh. Hildebrandti* and the West-African *Rh. æthiops* (in *Rh. ferrum-equinum* the front face of the sella is perfectly devoid of hairs); (4) the ears are very much broader, scarcely attenuated below the tip, the tip itself blunt; (5) there are important differences in the proportionate length of the forearm, metacarpals, and phalanges as compared with the corresponding bones of *Rh. ferrum-equinum*; (6) the tail (which is complete in all the specimens examined) is extremely short, 21–26·8 mm., in *Rh. ferrum-equinum* (31 specimens from Europe) 34–40 mm.; (7) one of Ruppell's cotypes is mounted with the mouth sufficiently open as to give a view of the anterior portion of the tooth-rows: the upper canine and p^4 are so closely approximated, their cingula being in immediate connexion with each other, and the distance between their tips exactly the same as in "*Rh. Antinorii*," that it may safely be said that there is no rudimentary upper p^2 ; when, however, the upper p^2 is wanting, the same is the case with the lower p_3 , this latter being invariably lost before the upper p^2 . As to the types of *Rh. macrocephalus*, the one specimen is adult, with no trace of the lower p_3 , nor of the upper p^2 ; the second specimen is a young individual without the lower p_3 , but having on both sides of the upper jaw a p^2 so exceedingly minute as only to be perceptible under a strong lens, and situated not only exterior to the tooth-row, but quite on the outer side of the maxillary bone, above the adjacent teeth, thus proving (what, indeed, might have been expected) that the tooth which is constantly wanting in adult individuals of this species may

* Dobson, Ann. Mus. Civ. Genova, (2^a) ii. (1885) pp. 16–17.

still, perhaps exceptionally only, be found in a very rudimentary state in young ones.

According to the above, the synonymy of the species under consideration is as follows:—

- Rh. fumigatus*, Rüppell (1842), cotypes, in the Senckenberg Museum, from Shoa.
 = *Rh. macrocephalus*, v. Heuglin (1877), cotypes, in the Stuttgart Museum, from Adowa, Abyssinia.
 = *Rh. Antinorii*, Dobson (1885), type, in the Genoa Civic Museum, from "Daimbi, Shoa" *.

Measurements of Rh. fumigatus, macrocephalus, and Antinorii.

	<i>Rh. fumigatus.</i>			<i>Rh. macrocephalus.</i>		<i>Rh. Antinorii.</i>	
	Cotypes. (Mus. Senck.)		Topo- type. (Stock- holm.)	Cotypes. (Mus. Stuttg.)		Type. (Mus. Gen.) <i>Fide</i> Dob- son †.	Jifa Medir, Somali. (B. M.)
	Ad.	Ad.	♂ ad.	♀ imm.	♀ ad.	Ad.	♂ ad.
Forearm	mm. 54	mm. 54	mm. 52·5	mm. 52·7	mm. ?	mm. 52·1	mm. 52·8
3rd finger, metacarpal . .	38	38	37	38	37·8	35·6	36·6
" 1st phalanx . .	16	17	15·8	15·3	17	16	16·1
" 2nd phalanx . .	31	32	?	28	31	33	29·5
4th finger, metacarpal . .	39·3	40	38	39	41	38·1	38·2
" 1st phalanx . .	9·5	10·5	9·8	9	10	10·2	10
" 2nd phalanx . .	18	?	18·2	18	20·2	19·1	18·3
5th finger, metacarpal . .	40·4	40·5	39	40·2	41·8	38·6	40
" 1st phalanx . .	12·5	12·3	12·3	12·1	13	12·7	12·1
" 2nd phalanx . .	13·8	14·2	13·5	13·8	14·1	13·7	14·1
Tail, from anus †	22·6	21	23	26·8	25·5	24·1	25

* Probably Dembea, Abyssinia.

† Rendered from "inches" into millimetres. Dobson's method of measuring the metacarpals was probably slightly different from my own; in his measurement of the 2nd phalanx of the 3rd finger is, perhaps, included the (so-called) 3rd phalanx. For comparison, I subjoin measurements of a specimen of "*Rh. Antinorii*" in the British Museum.

‡ Allowing for a shrinkage of 1 or, at most, 2 mm. in Rüppell's (mounted) types. The exact position of the hinder border of the anus cannot be ascertained in these specimens.

Rhinolophus acrotis and *Rh. Andersoni*.

Rh. acrotis *.—There is a type (σ ad.) and a topotype † (σ jun., both in alcohol) preserved in the Stuttgart Museum, labelled "No. 986; Keren, v. Heuglin; 1862." Peters ‡ put the name down, without comment, as a synonym to *Rh. clivosus*, Cretzsch.§ (type from Mohila, Arabia), stated by him to occur both in Arabia and N.E. Africa. I find no reference to this species in Dobson's writings.

Results.—*Rh. acrotis* is decidedly the same *species* as recently described by Oldfield Thomas || under the name *Rh. Andersoni*. The types agree in all specific characters—in the nose-leaves, the ears, the structure of the wings and membranes, the tail, &c.; like *Rh. Andersoni* the type and topotype of *Rh. acrotis* lack every trace of the lower p_3 and upper p^2 . There is, however, a certain difference in the size. It *may be* due to the fact that the type (as well as the other specimens in the British Museum) of *Rh. Andersoni* is an immature individual. But the topotype of *Rh. acrotis* is also a young animal, by no means more advanced in age than the type of *Rh. Andersoni*, and nevertheless it is markedly larger. When, furthermore, considering that *Rh. acrotis* and *Rh. Andersoni* were procured in widely separated localities—the former in Erytrea, the latter in the Eastern Egyptian Desert,—I find it, at least provisionally, more advisable to keep them distinct as *subspecies* so long as it remains unproved that the obvious difference in size falls within the limits of individual variation. According to this, the nomenclature of the forms in question would be:—

Rh. acrotis, v. Heuglin (1861), type, in the Stuttgart Museum, from Keren, Erytrea, about $15^{\circ} 45' N.$, $38^{\circ} 30' E.$

Rh. acrotis Andersoni, Thomas (1904), type, in the British Museum, from the Eastern Egyptian Desert, about $22^{\circ} N.$, $35^{\circ} E.$

* Von Heuglin, "Beiträge zur Fauna der Säugethiere N.O.-Afrika's," N. Act. Ac. Cæs. Leop.-Car. xxix. (1861) p. 10.

† It would certainly do no harm to regard both of these specimens as "cotypes" (as they were called in a letter kindly sent me by Prof. Lampert), since they are the same species, taken by the same collector in the same locality. As, however, v. Heuglin, in the paper just referred to (p. 4), mentions *only* the adult male, I have to acknowledge this fact and restrict the term "type" to this specimen, calling the other a "topotype."

‡ Peters, MB. Akad. Berlin, 1871, p. 311.

§ Cretzschmar, Rüppell's 'Atlas' (1826), p. 47, Taf. xviii. Conf. also Peters, MB. Ak. Berlin, 1866, p. 16; and C. von der Decken, 'Reisen in Ost-Afrika,' iii. 1 (1869), Taf. ii. fig. 2.

|| Oldfield Thomas, Ann. & Mag. Nat. Hist. (7) xiv., Aug. 1904, p. 156.

Measurements of *Rh. acrotis* and *Rh. a. Andersoni*.

	<i>Rh. acrotis</i> .		<i>Rh. a. Andersoni</i> .		
	Type. ♂ ad.	Topo- type. ♂ jun.	Type. ♂ imm.	Paratypes. (3 imm. specms., skins.)	
				Min.	Max.
	mm.	mm.	mm.	mm.	mm.
Forearm	48.2	49.3	46.2	44.2	46.8
3rd finger, metacarpal . .	32.8	32.2	29.5	27	29.2
" 1st phalanx . .	16	16.4	14.3	13.8	14.8
" 2nd phalanx . .	24.7	26	♀ 23	21.8	23.1
4th finger, metacarpal . .	35	34	31	29.7	31.2
" 1st phalanx . .	9.8	10	8.9	8.8	9.1
" 2nd phalanx . .	16.7	15.7	♀ 14.5	13.5	15.5
5th finger, metacarpal . .	35.2	34.8	31.3	30	32.2
" 1st phalanx . .	10.7	11.1	9.9	9.8	10
" 2nd phalanx . .	15	14.5	13.2	12.2	13.8
Tail, from anus	32.8	31	?	?	?

Rhinolophus minimus and *Rh. hipposiderus*.

*Rh. minimus**.—The type, an immature but full-grown male (in alcohol), preserved in the Stuttgart Museum, is labelled "No. 987; Keren, v. Heuglin; 1862." It was identified by Peters † with *Rh. hipposiderus*. Dobson ‡ adopted this view.

Results.—*Rh. minimus* is undoubtedly referable to *Rh. hipposiderus* as a *species*. It has the decisive characters of this latter, above all: (1) the comparatively well-developed upper p^2 , placed entirely in the tooth-row; (2) the long and very narrow sella, with the lateral margins convergent towards the summit, the summit itself sharply pointed; (3) the 5th metacarpal shorter than or, at most, equal to the 4th. But it is decidedly smaller and, especially, shorter-tailed. There is in the British Museum a specimen from Sennar (♀ ad., in alcohol, no. 47.5.27.48) exactly like the type of *Rh. minimus*. This form therefore, probably, should be kept distinct as a small short-tailed race of *Rh. hipposiderus*.

* Von Heuglin, *op. cit.* (1861) p. 6; conf. also p. 4.

† Peters, MB. Akad. Berlin, 1871, p. 310.

‡ Dobson, Cat. Chir. Brit. Mus. (1878) p. 117.

Measurements of Rh. hipposiderus and Rh. h. minimus.

	<i>Rh. hipposiderus.</i>			<i>Rh. h. minimus.</i>	
	Schlungenbad. ♀ ad.	Switzerland. ♀ ad.	Hungary. ♀ ad.	Sennar. ♀ ad.	Type. Keren. ♂ imm.
Forearm	mm. 40	mm. 41	mm. 41·3	mm. 36·5	mm. 36·3
3rd metacarpal	25·8	26·5	26·7	24·7	24·1
4th metacarpal	28·7	29·4	29·8	27·2	26·3
5th metacarpal	28·2	28·6	29·8	26·5	25·7
Tail, from anus . . .	28·5	29·7	29·5	23·5	24·5

Rhinolophus auritus and Rh. capensis.

*Rh. auritus**.—One type, a full-grown male (mounted), preserved in the Stockholm Museum, labelled “♂ perf.; Knysna, 3. iv. 1854†; Victorin; Grill 1859; Mam. Ex. no. 1907.” Peters ‡, who examined the type, which still bears an additional label with his handwriting, regarded it as “ein etwas jüngerer Thier” of *Rh. capensis*. Dobson § has the name in his list of synonyms of *Rh. capensis*.

Results.—*Rh. auritus* is indistinguishable from *Rh. capensis*. The type may be called “ein etwas jüngerer Thier,” in so far as the teeth are still unworn, but the epiphyses of the metacarpals and phalanges are not separate. As the description drawn up by Sundevall on closer study gives us a “key” to the riddle why that most careful zoologist was led to regard *Rh. auritus* as a new species, I think it of some interest to specialists to review the points of difference enumerated by him. *Rh. auritus* is stated to be:—(1) “affinis *Rh. capensi*; paullo minor: cubitus 45 mm.”; the forearm in the type specimen measures (according to my method) 50 mm., in *Rh. capensis* (11 specimens) it varies between 47·6 and 51·5 mm.:

* Sundevall, in Victorin and Grill, “Zoologiska anteckningar under en resa i södra delarne af Caplandet åren 1853–1855,” Kgl. Sv. Vet.-Akad. Handl. new ser. vol. ii. pt. 2, no. 10 (1858), p. 13.

† Probably a slip of the pen for 2. v. 1854. Only one specimen (the present one) was brought home by Victorin.

‡ Peters, MB. Akad. Berlin, 1871, p. 311.

§ Dobson, Cat. Chir. Brit. Mus. (1878) p. 121.

(2) "color multo obscurior quam in sp. reliquis affinis"; the colour is as usual in *Rh. capensis*: (3) "aures evidenter majores quam in *R. capensi*, sed forma vix differunt"; the size of the ears is the same as in *Rh. capensis*: (4) "descriptio prosthematici nasi *Rh. euryalis* Blasii, exacte in sp. nostra quadrat," whereas in *Rh. capensis* "prosthema nasi simillimum eodem in *R. ferro equino*"; but it is a chief character of *Rh. capensis* that the sella is very much of the same form as in *Rh. euryale*, widely different from that of *Rh. ferrum-equinum*: (5) the 5th metacarpal is stated to be of the same length as the 4th, whereas in *Rh. capensis* it is "paullulum longior"; the length of the 5th metacarpal, compared with the 4th, is in *Rh. capensis* exactly as in the type of *Rh. auritus*: (6) "dentes multo minores quam in *R. capensi* et totum cranium paullo minus, gracilius"; the skull of the type is incomplete; the length of the upper and lower tooth-rows and of the mandible exactly as in *Rh. capensis*: (7) the upper p^2 is placed "paullulum inter dentes 2 proximos, non plane contiguos," whereas in *Rh. capensis* it is "omnino externus, dentibus 2 proximis perfecte contiguus"; there is in *Rh. auritus* a very narrow interspace between the upper canine and p^4 , as in *Rh. capensis*: (8) the lower p_3 is present in *Rh. auritus*, in *Rh. capensis* "plane deesse videtur"; the presence or absence of the p_3 varies in *Rh. capensis* according to the age of the individual.

Although, as proved by the above, *Rh. auritus* is identical with *Rh. capensis*, the eminent Swedish zoologist was, nevertheless, quite right in pointing out all the differences as just enumerated. According to his own statement (*loc. cit.*) Sundevall had, for comparison with his *Rh. auritus*, two specimens of *Rh. capensis*. But these latter cannot have been *Rh. capensis*. All that he says about them (*vide supra*) tends to prove, in my opinion to evidence, that they were the species recently described by me as *Rh. augur**. If in every case where Sundevall writes *Rh. capensis*, I substitute *Rh. augur*, the whole is perfectly correct. What, however, raises this assumption almost to certainty are the statements quoted above under (3), (4), (5), (6), and (7); they cannot possibly bear on *Rh. capensis*, but they are admirable when taken as a description of *Rh. augur*.

* Ann. & Mag. Nat. Hist., Nov. 1904, p. 380.

Measurements of Rh. auritus and Rh. capensis.

	<i>Rh. auritus.</i>	<i>Rh. capensis.</i>	
	Type. ♂ ad.	(8 adult spems., 2 skulls.)	
		Min.	Max.
	mm.	mm.	mm.
Forearm.....	50	47·6	51·5
3rd finger, metacarpal.....	33·8	32·2	35
" 1st phalanx.....	15	14·2	16·6
" 2nd phalanx.....	24	23·3	26
4th finger, metacarpal.....	35·7	35	38
" 1st phalanx.....	9·5	8·2	9·7
" 2nd phalanx.....	15	15	16
5th finger, metacarpal.....	35·3	34	38
" 1st phalanx.....	10·9	10·7	12
" 2nd phalanx.....	13	12	14
Tail, from anus.....	20·5	20	23
Mandible.....	13·8	13·7	13·9
Front of upper c to back of m^3	7·7	7·3	7·7
" lower c to back of m_3	8·2	8·2	8·3

LXIII.—*On a new Pycnogonid from the South Polar Regions.*

By T. V. HODGSON, Biologist to the National Antarctic Expedition.

[Plate XIV.]

DURING her stay in winter-quarters in McMurdo Bay the 'Discovery' secured among the biological collections a very large number of Pycnogonids, the species as well as individuals being abundant. Among them is a species which possesses a pair of ambulatory appendages more than the number hitherto allotted to the group, and on that account it has been suggested to me by the Director of the Natural History Museum to publish at once a description of this interesting species.

It appears to be fairly common, a single individual being frequently captured either with the D net* or the tangles

* The D net is a light trawl, of which the iron frame is shaped like the letter D, hence the name; both from its lightness and its shape it proved particularly useful for work under the ice.